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FEDERAL-STATE COOPERATIVE

SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

Rio Grande Drainage Basin

Ву

Division of Irrigation, Soil Conservation Service
United States Department of Agriculture
and
Colorado Agricultural Experiment Station

Data included in this report were obtained by the agencies named above in cooperation with the U. S. Forest Service, National Park Service, State Engineers of Colorado, Wyoming and New Mexico and other Federal, State and local organizations.



WATER SUPPLY OUTLOOK RIO GRANDE AND CANADIAN DRAINAGE BASINS

The water supply outlook for the Rio Grande and its tributaries in San Luis Valley is somewhat less than normal and much less favorable than a year ago. To the north of the Upper Rio Grande and along the Sange de Cristo Range the snow is practically gone even at high elevations. Precipitation in the valley has been very light all winter. On the Northern New Mexico tributaries the summer flow is expected to be very low with some near the minimum of record. Soil moisture conditions are poor throughout the watershed.

RIO GRANDE: At Wolf Creek Pass and to the north and south along the Continental Divide there was substantial snow melting during April and the current snow cover is less than average. To the north and east of the valley there is very little snow below 10,000 feet which is much below normal for May 1. The summer flow of the Rio Grande, Alamosa and Conejos Rivers is expected to be from 85 to 90 percent of normal and much below the 1949 season. Flow of other tributaries is expected to be low with near record minimum flows from the north and east of the valley. Streamflow in the Rio Grande during April was above average. Soil moisture conditions in the valley are very dry. Storage in irrigation reservoirs is above average and similar to a year ago.

On the headwaters of the Rio Chama snow cover has been much below normal for May 1 at Cumbres Pass. Although April runoff has been near average above El Vado the total summer flow into this reservoir is expected to be about 70 percent of normal. Elsewhere in northern New Mexico the summer streamflow will be from 30 to 50 percent of normal and near record minimum. Precipitation in the Middle Rio Grande area has been deficient. Soil moisture conditions are poor except in irrigated areas.

The combined storage of Elephant Butte and Caballo reservoirs is now about 800,000 acre-feet which is down nearly 100,000 from April 1. A year ago these reservoirs had in storage about 650,000 acre-feet. The summer flow of the Rio Grande into Elephant Butte will be much less than average. Precipitation in the lower Rio Grande Valley has been deficient through the winter season.

There has been practically no snow on the headwaters of the Pecos. Total storage in Alamogordo and McMillan reservoirs is 91,000 acre-feet as compared to 15,000 on May 1, 1949. Soil moisture conditions on the Carlsbad project are poor except in irrigation areas.

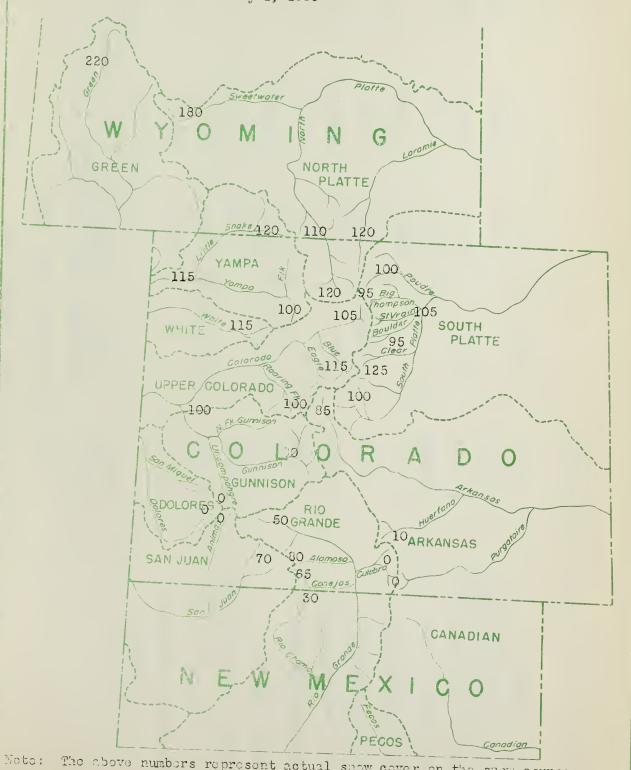
CANADIAN RIVER: Snow on the Canadian River tributaries during the winter months has been less than for many years. Runoff from snow melt will be near the minimum of record. Storage in Conchas is 288,000 acre-feet as compared to 300,000 on May 1, 1949. Soil, moisture, range and crop conditions on the Tucumcari project are described as fair.

Miscellaneous Series Paper No. 467, Colorado Agricultural Experiment Station



WATER CONTENT OF SNOW ON THE WATERSHEDS OF PLATTE, ARKANSAS, UPPER COLORADO AND RIO GRANDE BASINS BASED ON SNOW SURVEYS MADE APPROXIMATELY FIRST DAY OF MONTH

In Percent of Mormal May 1, 1950



Note: The above numbers represent actual snow cover on the snow courses on the watershed in percent of nermal May 1, 1950. These numbers do not necessarily coincide with expected summer runoff.

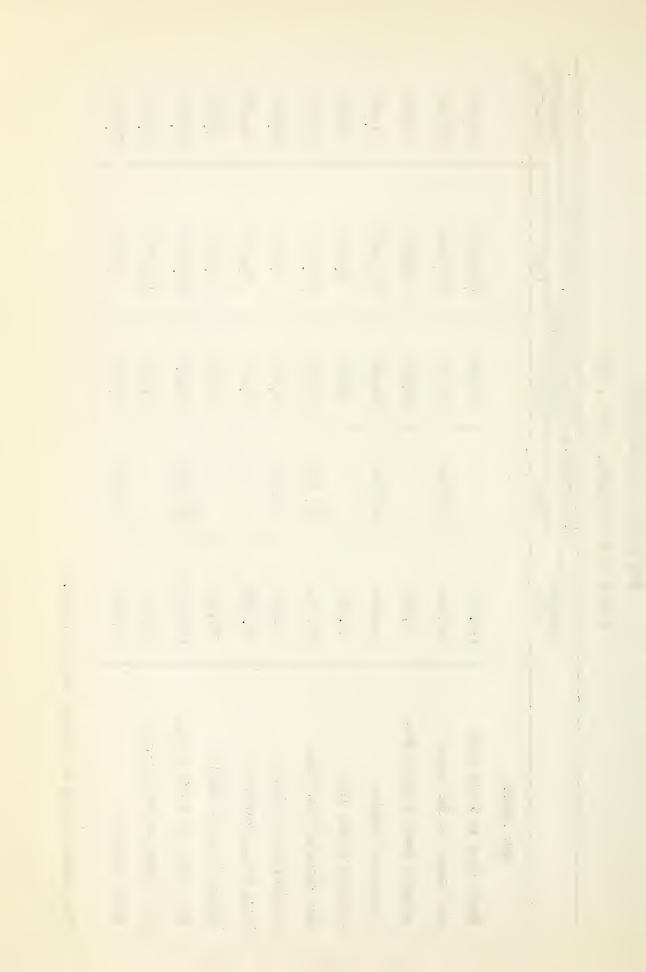


RIO GRANDE DRAINAGE BASINS

STREAM FLOW FORECASTS, May 1, 1950

		April-Sept.,	Incl., Streamflow,	low, Acre Fect	
	Forecast 1950	1 1 1	Measured Runoff 1948	ff 1947	10-year Avg. 1939-1948
RIO GRANDE					
South Fork at South Fork	120,000		192,000	10/1,000	130,000
Rio Grande at Del Norte	175,000	832,000	823,000	530,000	265,000
Alamosa above Terrace Res.	70,000		100,276	000,89	74,000
Conejos at Mogote	200,000	268,000	262,000	176,000	211,000
Culebra at San ^L uis	18,000		36,000	43,000	37,000
Rio Chama at Park View	150,000	319,000	222,000	148,000	214,000
Costilla at Costilla	17,000	78,000	35,000	27,000	000,001
Toas at Los Cordovas	15,000		29,000	21,000	000,444
Embudo Creek at Dixon	20,000		65,000	27,000	63,000
Rio Grande at Otowi Bridge	400,000	000,846	987,000	422,000	867,000
Rio Grande at San Marcial	150,000		727,000	180,000	689,000
Pecos at Pecos	25,000	79,000	70,000	38,000	70,000

*Including change in storage in El Vado Res.



SNOW SURVEYS AND IRRIGATION WATER FORECASTS RIO GRANDE BASIN

STATUS OF RESERVOIR STORAGE, MAY 1, 1950

STREAM	RESERVOIR	USABLE		THOUSANDS OF ACRE FEET About May 1	OF ACRE I	FET IN STORAGE	ORAGE 10-year Ave.*
		1000 A.F.	1950	1949	1948	1947	1939-1948
RIO GRANDE							
	Rio Grande	45.8	19.7	21.2	30.5	6.9	18.1
	Santa Maria	45.0	22.1	17.3	7.5	ν. γ.	10.9
	Sanchez	103.0	13.0	8.9	12.0	7.4	17.2
	Terrace	17.7	7.7	2.5	10.7	2.4	7.9
	Continental	26.7	19.0	12.6	8.9	1.2	8.8
	Elephant Butte	2273.7	615.2	508.3	1,08.6	450.0	1224.7
	Caballo	365.0	193.7	149.4	151.9	207.3	160.3
CHAMA RIVER	1	,	,				
	El Vado	226.0	0.99	115.0	0.88	84.1	115.9
CANADIAN RIVER							
	Conchas	0.009	283.8	300.6	371.0	358.7	280.6
PECOS RIVER							
	Alamogordo	148.0	87.5	11,4	ų, V,	23.2	4.84
		· 	·	•	•) ;)

*Some for shorter periods



SNOW SURVEYS AND IRRIGATION WATER FORECASTS for RIO GRANDE BASIN May 1, 1950

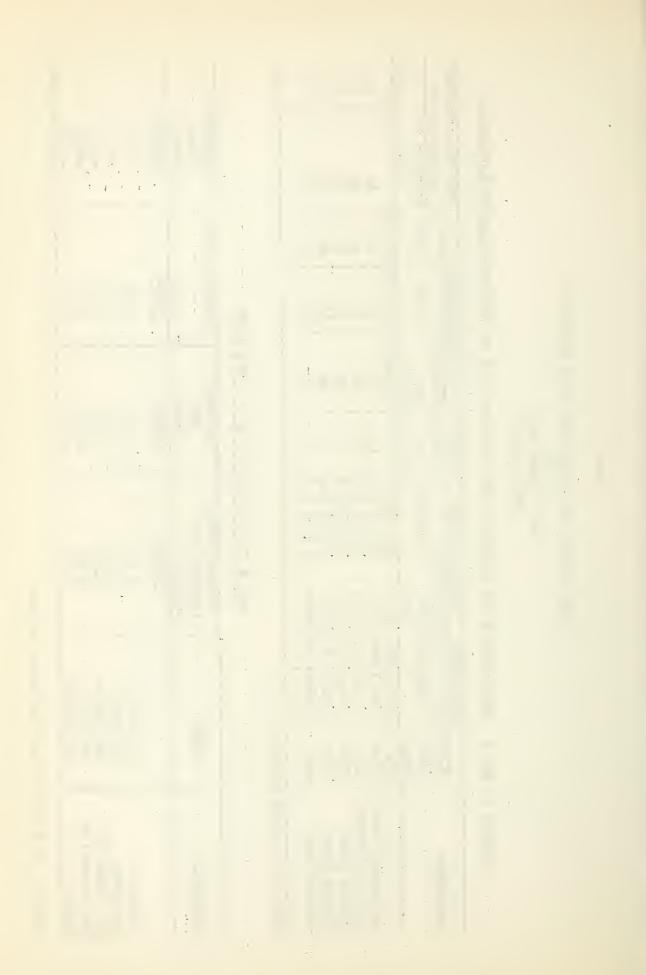
SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHEDS SUMMARY OF MAY 1

	Sn	Snow Depth	Water	Water Content	Number	Snow	Snow Density		1950 Water Content	ntent
WATERSHEDS	Fourteen		Fourteen		Courses	Fourteen			in percent of	of
	year	1949 1950 year	0 year	1949 1950	ru.	year	1949	195c.	Fourteen Yr.	
	Avg.*		Avg. *		Average Avg. *	Avg. *			Avg.*	1949
		In. In.	In.	In, In,		Percent	Percent	Percent		
Rio Grande (Colo.)		24.7 10.	0 9.2	10.6 4.5	10	다	13	元	767	775
Upper Rio Grande		31.3 11.	5 10.4	15.4 5.6	Μ	777	647	67	54	36
Alamosa River	34.6	39.3 27,	5 12,2	15.4 10.9	~	35	39	9	89	71
Conejos River		21.5 5.2 10.1	2 10.1	9.5 3.0	2	9†7	1717	28	30	32
Culebra River	28.2	25.4 0°	0 10.0	8.2 0.0	М	28	32	.	0	0
*Some for shorter periods	eriods									

PRECIPITATION DATA*

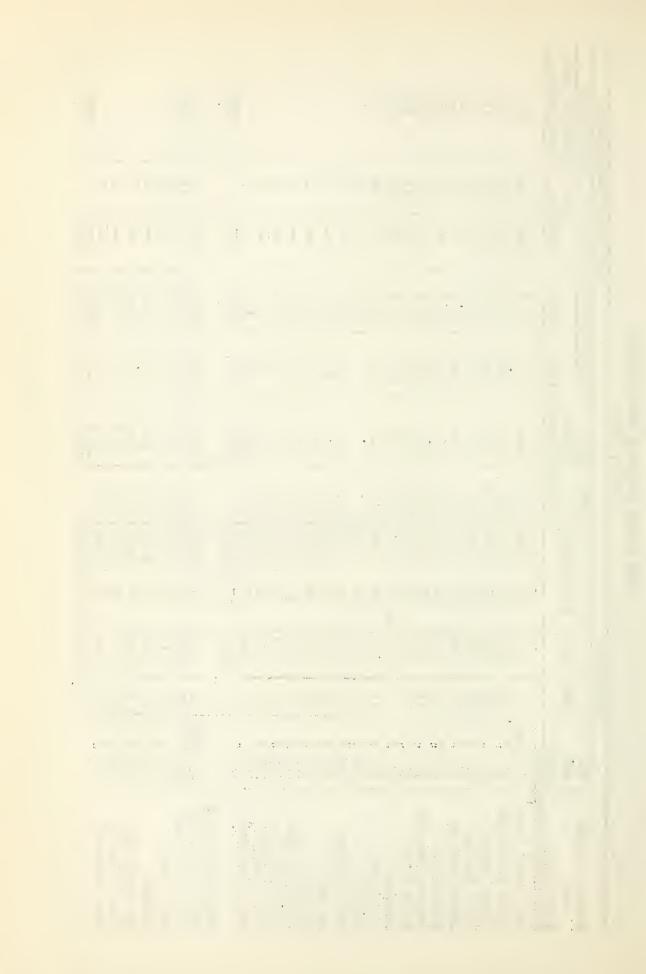
		Precipitation	Departure	Precipitation	Departure
WATERSHED	STATE	October 1 to	from		from
		April 30	Normal	April	Normal
		Inches	Inches	Inches	Inches
Canadian	New Mexico	1,43	-4, 11	0.34	-1.05
Rio Grande	Colorado	61.19	-4.32	07.0	-0.69
Rio Grande (N)	New Mexico	4.83	-3.92	1.37	-0.83
Rio Grande (S)	New Mexico	1.47	-2.10	0.11	-0.61
Pecos	New Mexico	1.54	-2.70	0,35	-0.83

*Average of Selected High Elevation Stations



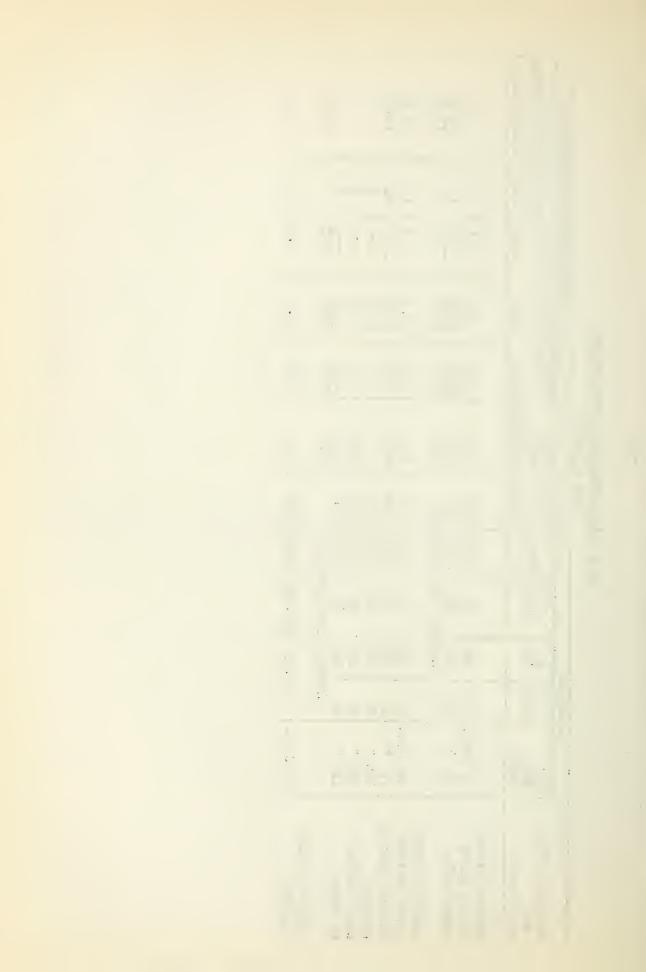
RIO GRANDE DRAINAGE SNOW SURVEYS May 1, 1950

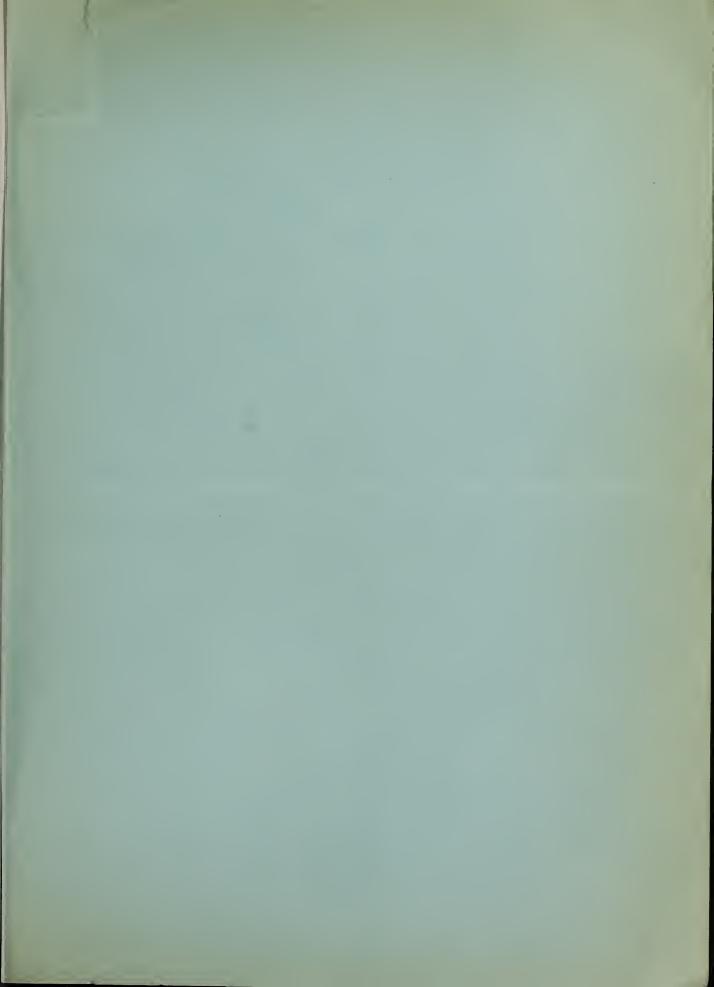
Measurements	Past Record	f Av. Water Con-	tent(Inches)		27.7	2.4	1,1	1.1	4.1	23.3	19.1	1.2	10,0	2.3									9.5		27.7	2,4	1.2					l c
- 1		Yrs. of	Rec.		17	17	13	13	17	10	77	Ħ	10	10	Н	Н	Н	_	-+	٦		Н			17	17	1	႕	٦	Ч	Ч	
Snow Cover	Inches		1948		36.0	4.6	0.4	0,5	3.1	1	17,3	0.0	0,6	0.0		1	1	1	1	1	1	1	7.9		36.0	7.6	0.0	-		1		1
SY	Water Content (Inches		1949		39.5	6,8	0,8	0.3	2,0	30,0	18.7	0.0	8,2	0,0	18,5	0,3	20°5	9.1	10.8	ぴぴぴ	0°6	4.1	10.6		39.5	ر. د د	0,0	9.1	10,8	5,5	0,9	l-
	Water C		1950		16.8	0.0	0,0	0.0	0,0	21.8	0.9	0,0	0,0	0.0		0,0	2,0	0,3	0.0	0.0	0.0	0.0	4.5		16.8	000	0.0	0,3	0°0	0,0	0,0	A.i.A.i
277	Snow	Depth	(Inches)		34.4	0.0	0°0	0,0	0.0	55.0	10,3	0.0	0.0	0.0		0.0	6.6	1,1	0,0	0.0	0,0	0,0	10.0		34.4	0.0	0,0	1,1	0.0	0.0	0,0	D. I. I.
Control	e	of	Survey		1/30						1,30										1/5		4		1/30	1/2	アンプ	5/5	1/5	5/1		
		Elev.			10000	9350	096	9300	9300	11500	10000	9700	10000	8200	9950	9450	10100	10300	10900	10000	9300	10000	drainage		10000	9350	9700	10300	10900	10000	9300	
		Range			SE	鬥	因	(E	7011	当	<u>万</u>	2W	105,2W	72W	PIN.	当	弘	M	31	SE	J.E	田の	for		2E	E	2E	511	311	<u>공</u>]E	
tion		Twp			37N	NO7	36N	33N	285	37N	32N	NTH	37.2N	29W	36N	35N	32N	NT7	L2N	NT7	NOT/	15N	Average	-	37N	MO1	NT'	NTH	42N	11 N	Not	
Location		Sec.									17					25					32		T.		7	FT	∞	26	2	F)		•
	No.	and	State	RADO	26 Colo.	27 "	n 27	11 617	172	n 92	77 - 11	80	82 "	# † ₈	108 "	109 "	110 "	122 "	123 "	124 "	125 "	126 "			ပ	27 "	80 =	122 "	123 "	124 "	125 "	
	Drainage Basin	and	r Course	RIO GRANDE IN COLORADO	Wolf Creek rass	Upper Rio Grande	Silver Lakes	River Springs	LaVeta Pass #2	Summitville	Cumbres Pass #2	Santa Maria	Culebra	Ft. Garland	Platoro	West Conejos	La Manga	Pyramid	Spr. Creek Pass	Pool Table Mt.	Lake Humphreys	Cochetopa Pass		UPPER RIO GRANDE	Wolf Creek Pass	Upper Rio Grande	Santa Maria	Pyramid	Spr. Creek Pass	Pool Table Mt.	Lake Humphreys	

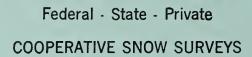


RIO GRANDE DRAINAGE SNOW SURVEYS May 1, 1950

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	Measure	Prat	Yrs. of	Rec,		در	12			73)=	ţ	l r-	1 7			10	
	Snow Cover Measurements	(nohea)		1948			5			r,	17.3		1	1	8.9		0.6	
	Snc	Water Content (Inches		1949		0	30.0	15.1		0.3	18,7	18,5	0.3	20.2	9,5	\	8.2	
		Water C		1950		0,0	27.8	10.9		0.0	6.0		0.0	2.9	3.0	}	0°0	
May 1, 17,70		Snow	Depth	Survey (Inches) 1950		0.0	55.0	27.5		0.0	10.3		0.0	9.9	5.2		0.0	
الم الله		Date	of	Survey		14/27	14/27	age e		5/2	10000 11/30	5/1	5/1	5/1			4/30	
			Kange Elev.			0096	11600 11/27	drainage	-10.1	9300	10000	9950	9450	100100	inage)	10000 4/30	
								age for		<u>S</u> E	5 正	M-T	臣	<u>万</u> 臣	for drainage		105.2W	
	ű	E	Sec. Twp.			36N	37N	Aver		33N	32N	36N	35N	32N	Average		37.2N	••
	Location		Sec.			15	2			25	17	22	25	24	ΑV			-
	PC	No.	and	State		47 0010. 15	n 92			49 Colo.	n 22	108 "	109 "	110 11			82 Colo,	
	t.	Drainage Basin	and	Snow Course	ALAWOSA BIVER	Silver Lakes	Summitville		CONEJOS RIVER	River Springs	Cumbres Pass #2	Platoro	West Conejos	La Manga		CULEBRA RIVER	Culebra	







Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"WATER IS THE WEST'S GREATEST RESOURCE"